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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,502

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Chunlin Tao

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32940 7590 03/09/2007  
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EXAMINER

GROSS, CHRISTOPHER M

ART UNIT

PAPER NUMBER

1639

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/823,502	TAO ET AL.	
	Examiner	Art Unit	
	Christopher M. Gross	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/13/2005</u>  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Responsive to communications entered 2/21/2007. The Examiner on the instant case has changed (see contact information below). Claims 1-14 are pending. Claims 1-14 are examined herein.

#### ***Election/Restrictions***

Applicant's election of "CT105", shown in figure 2B of the instant specification for the asymmetric monolayer forming species and "nucleic acids" for the population of biological species in the reply filed on 10/13/2006 is acknowledged. Because applicant did not distinctly and specifically point out any supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

#### ***Priority***

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120 is acknowledged: this application is a CON of 09/847,113 05/01/2001 (now PAT 6,753,143) which claims benefit of 60/201,026 05/01/2000 and is a CIP of 09/626,096 07/26/2000.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 4 recites vague and indefinite language in a "n protein." The disclosure does not provide a definition for "n". Thus, as currently written, the metes and bounds of the claim is unascertainable.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Bauer (US Patent 6096497 – IDS entry 10/13/2005).

The claimed invention, as set forth in claim 1 is drawn to a method of modifying a metallic surface comprising:

contacting the metallic surface with an asymmetric monolayer forming species having the formula: MFS-A-A-AG

wherein A is an attachment linker moiety; MFS is a monolayer forming species; and AG is an electroconduit forming species.

Claims 2-14 represent variations thereof.

Bauer teaches throughout the document and especially the abstract the use of an electrostatic biosensor.

Said electrostatic biosensor according to Bauer in column 5, line 33 comprises a metallic surface including gold, reading on "contacting the metallic surface" of claim 1 and the gold of claim 6.

Bauer teaches in columns 5-6 depositing a self-assembled monolayer comprising a disulfide species R-S-S-R' on said metallic surface wherein R and R' may represent two long or short alkyl chains and providing insulation or else conduct electricity, reading on the MFS monolayer and AG electroconduit of claim 1, insulator of claim 7, sulfur of claim 5, alkyl groups of claims 8 and 11. In the same passage, Bauer teaches carboxylic acid pendant groups, which is taken as the heteroalkyl and substituted alkyl of claims 9 and 10, respectively.

Said pendant groups of Bauer are used to covalently immobilize an enzyme, which is taken as the attachment linker of claim 14. Said enzyme of Bauer reads on the protein of claim 4 and the "biological species" of claim 2 (i.e. A=COOH; MFS=alkyl)

When each of R or R' is a short alkyl group such as methyl, said disulfide species according to Bauer reads on claim 11 with 1 carbon, claim 12 when R3-5 are each hydrogen, claim 13 when n is 0 and is "directly attached" as set forth in claim 14.

Bauer teach in the paragraph bridging columns 1 and 2 DNA based biosensors, reading on the nucleic acid (elected species) of claim 3.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Marks et al (US Patent 6,203,758).

Marks et al teach, throughout the document and especially the abstract a microcircuit based method for performing analysis of multimolecular interactions on an array.

Said microcircuit method according to Marks et al in column 3, line 45 comprises a metallic surface including gold, reading on "contacting the metallic surface" of claim 1 and the gold of claim 6.

Marks et al teach in column 11, line 10-16 depositing a "thiolipid" (R-S-S-R) wherein R may represent an alkyl or aryl moiety or any combination thereof. Said disulfide of Marks et al reads on A being sulfur, as set forth in claim 5. Absent evidence to the contrary, the "thiolipids" according to Marks et al represent an insulator, as lipid tails do not conduct electricity, reading on claim 7.

According to the paragraph bridging pages 1 and 2 of the instant specification, an alkyl chain represents a type of monomer forming species (MFS) and electroconduit forming species (AG) are short chain alkyl groups, thus the "thiolipid" of Marks et al reads on the MFS-A-A-AG structure of claim 1. In so far as the monolayer forming species being asymmetric, Marks et al teach in figure 8 various alternative embodiments including asymmetric disulfide species.

The alkyl group shown in figures 2-3 according to Marks et al are in the range of about 7 to 20 carbons, as set forth in claim 8.

Marks et al disclose in figure 5C, an oligonucleotide containing a cyclic disulfide derivative, reading on the nucleic acid (elected species) of claim 3 and "biological species" of claim 2, wherein the MFS is a short alkyl chain (methylene) and attachment

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linker A is sulfur. Said oligonucleotide containing a cyclic disulfide in figure 5C per Marks et al bears heteroalkyl and substituted alkyl constituents, reading on claims 9 and 10 respectively. The methylene group according to Marks et al reads on claim 11 with 1 carbon, claim 12 when R3-4 are each hydrogen and R5 is alkyl, claim 13 when n is 2 and is taken as being directly attached, as set forth in claim 14.

Marks et al teach in column 4, line 46 binding entities including proteins, reading on claim 4.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Gross whose telephone number is (571)272-4446. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. Douglas Schultz can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher M Gross  
Examiner  
Art Unit 1639

cg

JON EPPERSON  
PRIMARY EXAMINER

